

In the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application. Claims are pending, with claims being the independent claims. Currently amended claims are shown with additions underlined and deletions in ~~striketrough~~ text. No new matter is added by these amendments.

1-17. (Canceled)

18. (Currently amended) An interrogator for a radio identification system having a plurality of tags, the plurality of tags including a first subset of tags operating only within a first frequency band, the plurality of tags including a second subset of tags operating only within a second frequency band, the first subset of tags excluding each tag from the second subset of tags, said interrogator comprising:

(a) a first radio frequency module having a transmitter configured to transmit an output signal at a first frequency to the first subset of tags, the first radio frequency module including a receiver configured to receive return signals transmitted by the first subset of tags operating at the first frequency, the first frequency being within the first frequency band, the transmitter and the receiver of the first radio frequency module being operable over the first frequency band, the first frequency band including a plurality of frequencies each being outside the second frequency band;

(b) a second radio frequency module having a transmitter configured to transmit an output signal at a second frequency to the second subset of tags, the second radio frequency module having a receiver configured to receive return signals transmitted by the second subset of tags operating at the second frequency, ~~the second frequency being within a second frequency band different from the first frequency band,~~ the transmitter and the receiver of the second radio frequency module being operable over the second frequency band, the second frequency band including a plurality of frequencies each being outside the first frequency band;

(c) a controller module coupled to said first and second radio frequency modules, said controller module including a controller configured to control the transmitter associated with

the first frequency and the transmitter associated with the second frequency, the controller module including a decoder configured to decode return signals received from said tags.

19. (Previously presented) The interrogator of claim 18, wherein the decoder includes a signal divider configured to divide the return signals into multiple channels and a converter configured to produce pulses based on the return signals.

20. (Previously presented) The interrogator of claim 19, wherein the decoder includes a synchronizer configured to synchronize a frequency of the pulses and an extractor module configured to extract information from the pulses according to a protocol associated with the tag transmitting the return signal.

21. (Previously presented) The interrogator of claim 20, wherein the decoder further includes a code checker associated with the pulses and selector configured to select the channel without code violations.

22. (Previously presented) The interrogator of claim 18, wherein the first radio frequency module and the second radio frequency module are coupled to the controller through a bus.

23. (Currently amended) The interrogator of claim 22, wherein the plurality of tags including a third subset of tags operating only within a third frequency band, the third subset of tags excluding each tag from the first subset of tags and each tag from the second subset of tags, the third frequency band having a plurality of frequencies each being outside the first frequency band and the second frequency band,

the interrogator further comprising:

a third radio frequency module having a transmitter configured to transmit an output signal at the third frequency to the tags, the third radio frequency module having a receiver configured to receive return signals transmitted by tags operating at the third frequency.

24. (Currently amended) The interrogator of claim 23, the plurality of tags including a fourth subset of tags operating [,] only within a fourth frequency band [and, the fourth frequency band] excluding each tag from the first subset of tags, [and] each tag from the second subset of tags and each tag from the third subset of tags, [further including] the fourth frequency band having a plurality of frequencies each being outside the first frequency band, the second frequency band and the third frequency band,

the interrogator further comprising:

a fourth radio frequency module having a transmitter configured to transmit an output signal at the fourth frequency to the tags, and including a receiver configured to receive return signals transmitted by tags operating at the fourth frequency.

25. (Previously presented) The interrogator of claim 24, wherein the first frequency falls in a range 100 to 200 KHz.

26. (Previously presented) The interrogator of claim 25, wherein the second frequency is substantially 13.56 MHz.

27. (Previously presented) The interrogator of claim 26, wherein the third frequency falls in a range 458 to 917 MHz.

28. (Previously presented) The interrogator of claim 27, wherein the fourth frequency is substantially 2.45 GHz.

29. (Previously presented) The interrogator of claim 19, wherein each transmitter includes an antenna configured to transmit its output signal in response to a control signal from the controller.

30. (Previously presented) The interrogator of claim 29, wherein the divider includes a circulator having an input port coupled to the antenna and an output port for each of the channels.

31. (Previously presented) The interrogator of claim 30, wherein the divider includes a mixer and an amplifier for each of the channels, each of the mixers having an input coupled to the respective output port of the circulator and an output coupled to the respective amplifier for the channel, the output of each amplifier is coupled to a converter configured to convert the return signals into pulses for the channel.

32. (Previously presented) The interrogator of claim 31, wherein the converter includes a pulse shaping circuit for each of the channels.

33. (Previously presented) The interrogator of claim 32, wherein the pulse shaping circuit includes an isolated output port coupled to a bus connected to the controller.

34. (Currently Amended) A radio identification interrogator, comprising:

a first radio frequency (RF) module being associated with its own frequency band and having a transmitter and a receiver, the transmitter of the first RF module being configured to send an output signal having a carrier frequency within the frequency band associated with the first RF module, the receiver of the first RF module configured to receive a return signal based on the output signal associated with the transmitter of the first RF module and being associated with a tag from a first plurality of tags, the first RF module is configured to receive a return signal modulated according to a first protocol from a plurality of protocols; and

a second RF module being associated with its own frequency band different from the frequency band associated with the first ~~radio-frequency~~ RF module, the second RF module having a transmitter and a receiver, the transmitter of the second RF module being configured to send an output signal having a carrier frequency within the frequency band associated with second RF module, the receiver of the second RF module configured to receive a return signal based on the output signal associated with the transmitter of the second RF module and being associated with a tag from a second plurality of tags, the first plurality tags excluding each tag from the second plurality of tags, the second RF module is configured to receive a return signal modulated according to a second protocol from a plurality of protocols.

35. (Previously presented) The radio identification interrogator of claim 34, further comprising:

a controller coupled to the transmitter of the first RF module and the transmitter of the second RF module; and

a decoder coupled to the receiver of the first RF module and the receiver of the second RF module.

36. (Canceled)

37. (Previously presented) The radio identification interrogator of claim 36, further comprising:

a decoder coupled to the receiver of the first RF module and the receiver of the second RF module, the decoder having a first output channel associated with the first protocol and the second output channel associated with the second protocol.

38. (Currently amended) A method, comprising:

sending a signal having a carrier frequency within a first frequency band;

sending a signal having a carrier frequency within a second frequency band [different] mutually exclusive from the first frequency band;

receiving, from a first tag operative only within the first frequency band, a return signal based on the signal having the carrier frequency within the first frequency band, the return signal ~~associated with the first frequency band being~~ associated with the first tag being within the first frequency band and outside the second frequency band; and

receiving, from a second tag operative only within the second frequency band, a return signal based on the signal having the carrier frequency within the second frequency band, the return signal ~~associated with the second frequency band being~~ associated with the second tag and not the first tag being within the second frequency band and outside the first frequency band.

39. (New) The method of claim 38, wherein:

the return signal associated with the first frequency band is modulated according to a first protocol from a plurality of protocols; and

the return signal associated with the second frequency band is modulated according to a second protocol from a plurality of protocols.

40. (New) The method of claim 38, wherein the carrier frequency within the first frequency band is between 100 to 200 KHz.

41. (New) The method of claim 38, wherein the carrier frequency within the second frequency is substantially 13.56 MHz.

42. (New) The method of claim 38, further comprising:

sending a signal having a carrier frequency within a third frequency band, the third frequency band being mutually exclusive from the first frequency band and the second frequency band; and

receiving, from a third tag operative only within a third frequency band, a return signal based on the signal having the carrier frequency within the third frequency band, the return signal associated with the third frequency band being associated with the third tag, not the first tag and not the second tag,

the carrier frequency within the third frequency band being between 458 to 917 MHz.

43. (New) The method of claim 42, further comprising:

sending a signal having a carrier frequency within a fourth frequency band, the fourth frequency band being mutually exclusive from the first frequency band, the second frequency band and the third frequency band; and

receiving, from a fourth tag operative only within a fourth frequency band, a return signal based on the signal having the carrier frequency within the fourth frequency band, the return signal associated with the fourth frequency band being associated with the fourth tag, not the third tag, not the second tag and not the first tag,

the carrier frequency within the fourth frequency band being substantially 2.45 GHz.

44. (New) A radio identification interrogator, comprising:

a first radio frequency (RF) module being associated with its own frequency band and having a transmitter and a receiver, the transmitter of the first RF module being configured to send an output signal having a carrier frequency within the frequency band associated with the first RF module, the receiver of the first RF module configured to receive a return signal within the frequency band associated with the first RF module and based on the output signal associated with the transmitter of the first RF module, the return signal associated with the first RF module being associated with a tag from a first plurality of tags; and

a second RF module being associated with its own frequency band mutually exclusive from the frequency band associated with the first RF module, the second RF module having a transmitter and a receiver, the transmitter of the second RF module being configured to send an output signal having a carrier frequency within the frequency band associated with second RF module, the receiver of the second RF module configured to receive a return signal within the frequency band associated with second RF module based on the output signal associated with the transmitter of the second RF module, the return signal associated with the second RF module being associated with a tag from a second plurality of tags, the first plurality tags excluding each tag from the second plurality of tags,

the first frequency band including a plurality of frequencies each being outside the second frequency band, the second frequency band including a plurality of frequencies each being outside the first frequency band.